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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MEW, KEVIN D

ART UNIT	PAPER NUMBER
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2664

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/680,829

Applicant(s)

O'CONNELL ET AL.

Examiner

Kevin Mew

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 18-20, 27-31, 33-37, 40-42 and 44-53 is/are rejected.
- 7) ☒ Claim(s) 14-17, 21-26, 32, 38, 39 and 43 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 October 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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Detailed Action

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: reference numeral 52 in Fig. 2. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 12, 16, 39, 47, 50 are objected to because of the following informalities:

The term “the” should be replaced with “a” for the limitation “the communication codec” recited in claims 12, 16, 39.

The term “the a in dependence” in lines 3-4 of claim 47 should be corrected with another appropriate term”.

A semicolon is missing at the end of the limitation in line 7 of claim 50.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 6, 18-20, 30, 40-42, 46-49, 53** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

There is a lack of antecedent basis for the limitation "the value of the metric" in lines 3-4 of claim 6. It is unclear on what this limitation refers to. Appropriate correction is required.

There is a lack of antecedent basis for the limitation "the results of said calculation" in line 2 of claim 30, lines 3-4 of claim 46, and line 4 of claim 47. It is unclear on what this limitation refers to. Appropriate correction is required.

There is a lack of antecedent basis for the limitation "the transmission characteristics" in line 3 of claim 48, line 3 of claim 49. It is unclear on what this limitation refers to in these two independent claims. Appropriate correction is required.

The term "about" in claims 18-20, 40-42 is a relative term, which renders the claim indefinite. The term "about" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention. Appropriate correction is required.

It is unclear on what the term "same" means in line 4 of the claim. The specification does not provide a standard for ascertaining the requisite degree, and one of

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ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-4, 7-11, 27-31, 33-36, 44-47, 50-53 are rejected under 35 U.S.C. 102(e) as being anticipated by Schuster et al. (USP 6,363,053).

Regarding claims 1 & 34, Schuster discloses a computer software and hardware product to perform a method of monitoring quality of service (collecting quality of service information from network traffic, see lines 21-22, col. 3, lines 38-44, col. 11 and abstract) in communications over a packet-based network between two points (transmitting traffic from a source to a destination over a plurality of network nodes over a packet based network, see lines 21-30, col. 3 and Fig. 3), at least one of which is an endpoint (destination, see line 25, col. 3), comprising the steps of:

transmitting test packets across the network (transmitting test traffic from a source to a destination, see lines 24-25, col. 3) and monitoring transmission characteristics of

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said test packets (monitoring characteristics of the test traffic transmitted by the source and characteristics of the test traffic received by the destination, see lines 21-30, col. 3);

dynamically calculating from said transmission characteristics a measure of network performance (identifying quality of service information by comparing characteristics of the test traffic transmitted by the source and characteristics of the test traffic received by the destination, see lines 21-30, col. 3); and

providing at said endpoint a dynamic indication of the network performance based on said calculation (comparing measured quality of service characteristics with the specified quality of service characteristics, thereby determining conformance to the service level agreement, see lines 5-9, col. 4).

Regarding claims 2 & 35, Schuster discloses a computer software and hardware product to perform the method according to claims 1 and 34, respectively, wherein said transmission characteristics are selected from packet loss, transmission delay, and a combination thereof (QoS characteristics may consist of measurable attributes such as packet loss and latency, see lines 4-7, col. 10).

Regarding claim 3, Schuster discloses a method according to claim 2, wherein said transmission characteristics include both packet loss and transmission delay (see lines 18-23, col. 12).

Regarding claim 4, Schuster discloses a method according to claim 1, wherein the indication of the network performance is provided by means of a visual display associated with the endpoint (see lines 5-8, col. 15).

Regarding claim 7, Schuster discloses a method according to claim 1, wherein said test packets include a first series of test packets which issue from a source location to

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a destination location (transmitting test traffic from a source port to an echo port, see lines 33-34, col. 3) and a second series of test packets which issue from said destination location to said source location in response to said first series of test packets (the echo port then transmits echo traffic back to the source port, wherein the echo traffic corresponds to the test traffic, see lines 35-38, col. 3), whereby said network characteristics may be monitored by comparing the first and second series of test packets (identifies quality of service information by comparing characteristics of the test traffic to characteristics of the echo traffic, see lines 38-41, col. 3).

Regarding claim 8, Schuster discloses a method according to claim 7, wherein the first series of test packets include local source timestamp information and wherein the second series of test packets include local destination timestamp information, the difference between said local source timestamp information and local destination timestamp information being used to calculate a delay characteristic of the network (a timestamp may be used to accurately record the time of transmission and receipt if a packet transmission count is taken at the source and a packet count is taken at the source if the traffic is returned from an echo port, lines 29-37, col. 11).

Regarding claim 9, Schuster discloses a method according to claim 8, wherein the delay characteristic is the absolute delay in echo-free connections (T_a) between the source and destination locations over the network (test traffic is transmitted by a source to the unused port, see lines 36-64, col. 10).

Regarding claim 10, Schuster discloses a method according to claim 7, wherein a measure of packet loss is obtained by comparing the packets issued from the source location and the packets received back at the source location (packet loss can be

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measured by the number of packets received to the number of packets originally transmitted, see lines 18-20, col. 12 and 62-65, col. 13).

Regarding claim 11, Schuster discloses a method according to claim 9, wherein a measure of packet loss is obtained by comparing the packets issued from the source location and the packets received back at the source location (packet loss can be measured by the number of packets received to the number of packets originally transmitted, see lines 18-20, col. 12 and 62-65, col. 13).

8 Regarding claim 12, Schuster discloses a method according to claim 11, wherein the measure of packet loss and the identity of the communications codec being employed by the endpoint are used to calculate an equipment impairment factor (I_e).

13 Regarding claim 13, Schuster discloses a method according to claim 12, wherein the calculation of I_e is made by looking up the measured packet loss in a stored table which correlates values of I_e with packet loss values for the codec being used.

Regarding claims 27 & 44, Schuster discloses computer software and hardware product to perform a method according to claims 1 & 34, respectively, wherein the step of providing a dynamic indication of the network performance includes providing, at the request of a user, an indication of one or more of said transmission characteristics (comparing measured quality of service characteristics with the specified quality of service characteristics, thereby determining conformance to the service level agreement, see lines 5-9, col. 4 and lines 38-44, col. 11).

Regarding claim 28, Schuster discloses a method according to claim 27, wherein the request of the user is made by means of an input device associated with the endpoint

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and the indication is provided by means of a display device associated with the endpoint (see lines 1-8, col. 15 and lines 38-44, col. 11).

Regarding claims 29 & 45, Schuster discloses a computer software with instructions to execute a method according to claims 1 and 34, respectively, further comprising the step of logging the network transmission characteristics (collecting QoS characteristics, see lines 41-45, col. 9 and lines 38-44, col. 11).

Regarding claims 30 & 46, Schuster discloses a computer software with instructions to execute the method according to claims 1 & 34, respectively, further comprising the step of logging the results of said calculation (a report is generated to indicate a percentage by which an observed and identified QoS characteristic deviated from the QoS characteristic as specified in the SLA, see lines 30-38, col. 9, 23-26, 33-35, col. 10 and lines 38-44, col. 11).

Regarding claim 31, Schuster discloses a method according to claim 30, wherein the step of logging the results of said calculation occurs only when said results are within a predetermined range (periods of non-compliance may be cumulatively measured, see lines 32-41, col. 12).

Regarding claims 33 & 47, Schuster discloses a method according to claims 1 & 34, respectively, further comprising the step of adjusting a billing record for a user in dependence on the results of said calculation (see lines 37-41, col. 12 and lines 38-44, col. 11).

Regarding claim 36, Schuster discloses a computer software and hardware product according to claim 35, wherein the transmission characteristics include the absolute delay in echo-free connections (T_a) between source and destination locations

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over the network (test traffic is transmitted by a source to the unused port, see lines 36-64, col. 10 and lines 38-44, col. 11 and abstract), obtained by comparing local timestamp information from source and destination locations on the network (a timestamp may be used to accurately record the time of transmission and receipt if a packet transmission count is taken at the source and a packet count is taken at the source if the traffic is returned from an echo port, lines 29-37, col. 11) and a measure of packet loss obtained by comparing the packets issued from the source location and the packets received back at the source location (packet loss can be measured by the number of packets received to the number of packets originally transmitted, see lines 18-20, col. 12 and 62-65, col. 13).

Regarding claim 50, Schuster discloses a system for monitoring quality of service in communications over a packet-based network (an apparatus for collecting quality of service information from network traffic over a packet-based network, see lines 22-30, col. 3 and 38-44, col. 11 and abstract), comprising:

- a source endpoint connected to the network via which a user may transmit communication signals over the network (a general purpose computer, connected to the network, transmits an IP header from a first network device, see lines 10-17, col. 4);

- a test packet generator for transmitting test packets across the network a test packet receiver for receiving test packets from the network (the set of instructions cause the general purpose computer to transmit a first IP packet from a first network device to a second network device, see lines 14-17, col. 4);

- a processor for measuring transmission characteristics of said test packets and for

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calculating from said transmission characteristics a measure of network performance (a comparator compares the measured quality of service characteristics with the specified quality service characteristics to determine conformance to the service level agreement, see lines 5-9, col. 4); and an output device associated with said endpoint for providing a dynamic indication of the network performance based on said calculation (the general purpose computer to perform the additional step of generating a report to indicate a level of conformance by a network administrative entity to a service level agreement, see lines 29-34, col. 4).

Regarding claim 51, Schuster discloses a system according to claim 50, wherein said test packet generator includes a timestamp generator for adding a local source timestamp to said test packets (see lines 29-44, col. 11).

Regarding claim 52, Schuster discloses a system according to claim 51, further comprising a destination endpoint with which said source endpoint is in communication over the network (see lines 29-38, col. 11), said destination endpoint having associated therewith: a test packet receiver for receiving test packets from the network (an echo or unused port for returning test traffic to the source, see lines 29-38, col. 9); a timestamp generator for adding a local destination timestamp to said received test packets (see lines 29-44, col. 11); and

a test packet re-transmitter for re-transmitting said received test packets with said local destination timestamp back to their source (an echo or unused port for returning test traffic to the source, see lines 29-38, col. 9).

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In claim 53, a system according to claim 52, further comprising a centralised time server in communication with the network for generating a standardised time and providing same to said source and destination endpoints (see lines 29-37, col. 11).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 5-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster in view of Vaid et al. (USP 6,520,131).

Regarding claims 5 & 6, Schuster discloses all the aspects of the claimed invention set forth in the rejection of claims, except fails to disclose the indication of the network performance is provided by means of an audio signal and a discrete signal emitted at the source endpoint when the value of the transmission characteristic passes a predetermined value.

However, Vaid discloses a method and apparatus for monitoring QoS in which alarms will be triggered when a QoS characteristic threshold is reached (see lines 23-55, col. 27 and Fig. 19).

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Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to combine the QoS monitoring apparatus of Schuster with the alarm portion of the GUI interface of QoS management tool of Vaid such that an aural signal will be generated to alert a transmission threshold is reached such as the QoS management tool taught by Vaid. The motivation to do so is to provide an audible signal to signify that the threshold of a certain transmission characteristic has been reached because it will provide an instant alert to bring attention to the network administrator on what transmission characteristic creates a bottleneck on the network performance.

6. Claims 12-13, 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster in view of Brueckheimer et al. (US Publication 2002/0087370).

Regarding claims 12-13, 37, Schuster discloses all the aspects of the claimed invention set forth in the rejection of claims, except fails to disclose the measure of packet loss and the identity of a communications codec being employed by the endpoint are used to calculate an equipment impairment factor (I_e) and the calculation of I_e is made by looking up the measured packet loss in a stored table which correlates values of T_e with packet loss values for the codec being used.

However, Brueckheimer discloses a planning tool for determining the performance of a communications packet network (see abstract) in which its E-model utilizes an Equipment Impairment factor, determined subjectively for each codec and for each % packet loss, to calculate the transmission rating factor (see all lines in paragraphs 0174 and 0178).

Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to combine the QoS monitoring apparatus of Schuster with the

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network planning tool of Brueckheimer such that the equipment impairment factor, determined subjectively for each codec and for each % packet loss, is used in modeling the transmission rating factor such as the equipment impairment factor taught by Brueckheimer. The motivation to do so is to provide a more accurate assessment would be achieved by incorporating the compression and decompression impairment and packet loss in the calculation of the equipment impairment factor because delay and packet loss is introduced and voice quality is affected by the use of compression and decompression.

7. **Claims 48-49** are rejected under 35 U.S.C. 103(a) as being unpatentable over Schuster.

Regarding claims 48-49, Schuster discloses all the aspects of the claimed invention set forth in the rejection of claims, except fails to disclose a telephone handset is used for displaying a dynamic indication of network performance based on the transmission characteristics of test packets transmitted across a network to which the handset is attached and for calculating a measure of network performance based on the transmission characteristics of test packets transmitted by the handset across the network.

However, Schuster discloses a general purpose computer or a combination of hardware and software can be used to display a dynamical indication of QoS characteristics based on the test traffic received at the destination node (see lines 10-33, col. 4 and lines 38-44, col. 11) and a comparator is used for comparing the measured quality of service characteristics with the specified quality of service characteristics to determine conformance to the service level agreement.

Therefore, it would have been obvious to one ordinary skill in the art at the time the invention was made to combine the QoS monitoring apparatus of Schuster such that a telephone handset that comprises a general purpose computer for displaying a dynamic indication of network performance based on the transmission characteristics of test packets transmitted across a network and for calculating a measure of network performance based on the transmission characteristics of test packets transmitted by the handset across the network such as the general purpose computer taught by Brueckheimer. The motivation to do so is to provide a smaller device instead of the PC based station (note that a PC can comprise a internet phone and the software and hardware required to collect QoS information) disclosed in Schuster (Destination, see Fig. 3) for displaying the transmission characteristics for the QoS information collected over the network because a smaller size device is easier to carry than a PC.

Allowable Subject Matter

Claim 18-20, 40-42 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 14-17, 21-26, 32, 38-39, 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In claim 14, a method according to claim 11, wherein the calculated value of T_a is used to calculate impairment factor.

In claim 32, a method according to claim 30, wherein the step of logging also includes logging the fact that a communications connection over the network has been lost.

In claim 38, a method according to claim 14, wherein the delay impairment factor (I_{dd}) is given by the formulae:

(i) for $T_a < 100\text{ms}$,

$I_{dd} = 0$; and

(ii) for $T_a \geq 100\text{ ms}$,

$$I_{dd} = 25 * ((1 + X^6)^{1/6} - 3 * (1 + (X/3)^6)^{1/6} + 2)$$

Where $X = (\log(T_a/100))/\log(2)$

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Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure with respect to monitoring quality of service in packet-based communications.

USP 6,577,648 to Raisanen et al.

USP 6,449,259 to Allain et al.

USP 6,496,477 to Perkins et al.

USP 6,574,213 to Anandakumar et al.

USP 6,671,724 to Pandya et al.

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 703-305-5300.

The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 703-305-4798. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KDM
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RICKY NGO
PRIMARY EXAMINER